and the other observations of the survey staff, and the series of articles will, it is hoped, when completed, form a worthy memorial of the late Mr. F. P. Pullar.

THE September issue of the *American Journal of Science* contains, as frontispiece, a process portrait of Prof. J. Willard Gibbs, and an obituary notice of Prof. Gibbs by Prof. H. A. Bumstead. The number also contains an article by Mr. J. Stanley Gardiner, of Cambridge, on "The Origin of Coral Reefs as shown by the Maldives."

THE September issue of the *Popular Science Monthly* (New York) is full of interesting matter, and contains, among other contributions, articles on "Palm and Sole Impressions and their use for Purposes of Personal Identification," by Prof. H. H. Wilder; "Theories of Sleep," by Dr. P. G. Stiles; "Mosquitoes and Suggestions for their Extermination," by W. L. Underwood; and part iv. of a series of articles by Prof. J. A. Fleming, F.R.S., on "Hertzian Wave Wireless Telegraphy."

MESSRS. WATTS AND CO. have issued, for the Rationalist Press Association, a reprint, at sixpence, of the first edition of "The Origin of Species." It will be remembered that an edition of the final form of this great classic was brought out not long ago by Mr. Murray in paper covers at one shilling.

THE additions to the Zoological Society's Gardens during the past week include a Sooty Mangabey (*Cercocebus fuliginosus*) from West Africa, presented by Mr. C. Pells; two Masai Ostriches (*Struthio camelus*, var. *massaicus*) from East Africa, presented by Mr. A. Marsden; two Grey-breasted Parrakeets (*Myopsittacus monachus*) from Monte Video, presented by Mr. C. Martin; a Vervet Monkey (*Cercopithecus lalandii*) from South Africa, two Mozambique Monkeys (*Cercopithecus pygerythrus*) from East Africa, a Black-striped Wallaby (*Macropus dorsalis*), a Black-tailed Wallaby (*Macropus walabates*), a Rufous Hare Wallaby (*Lagorchestes hirsutus*) from New South Wales, two Black-headed Caiques (*Caia melanocephala*) from Demerara, an Australian Barn Owl (*Strix delicatula*), a Winking Owl (*Ninox connivens*), a Burton's Lizard (*Lialis burtoni*), a Limbless Lizard (*Pygopus lepidopus*) from Australia, a Javan Loris (*Nycticebus javanicus*) from Java, two Grey Monitors (*Varanus griseus*) from North Africa, two Muricated Lizards (*Amphibolurus muricatus*) from Australia, deposited.

OUR ASTRONOMICAL COLUMN.

SEARCH-EPHEMERIS FOR COMET 1896 v. (GIACOBINI).—Herr M. Ebell contributes to No. 3898 of the *Astronomische Nachrichten* a second portion of the ephemeris for comet 1896 v. which he commenced in No. 3881 of the same journal. This ephemeris takes as the time of perihelion June 22·5, 1903, but Herr Ebell also gives ephemerides in which the time of perihelion passage is taken as June 6·5 and July 8·5 respectively.

Ephemeris 12*h*. *M. T.* (*Berlin*). T = June 22·5 1903.

1903	α h. m. s.	δ ° ′ ″	log *r*	log Δ	Brightness.
Sept. 26 ...	4 4 43 ...	+14 12 2 ...	0·2492	0·0177 ...	2 66
,, 30 ...	4 5 48 ...	+13 29 7			
Oct. 4 ...	4 6 9 ...	+12 45 0 ...	0·2604	0·0111 ...	2 61
,, 8 ...	4 5 47 ...	+11 59 0			
,, 12 ...	4 4 45 ...	+11 12 2 ...	0·2717	9·9973 ...	2 64
,, 16 ...	4 3 4 ...	+10 24 9			
,, 20 ...	4 0 49 ...	+ 9 37 8 ...	0·2831	0 0076 ..	2 39
,, 24 ...	3 58 3 ...	+ 8 51 4			
,, 28 ...	3 54 51 ...	+ 8 6 5 ...	0·2943	0 0130 .	2 21

INTENSITY OF SPECTRAL LINES.—*Circular* No. 72 of the Harvard College Observatory is devoted to the explanation of a scheme, proposed by Prof. Pickering, for the formation of a uniform universal method of recording the absolute intensities of spectral lines.

Comparative intensities are easily determined, in the case of bright lines by the bolometric method, in the case of dark lines by using the bright background as the standard unity intensity. Absolute values, however, are much more difficult to determine, and two methods offered themselves to Prof. Pickering's choice. First, the determination once for all of the intensities of certain well-known lines; secondly, the construction of an artificial standard with which all lines might be directly compared; he decided to use the second method.

A standard scale was constructed in which each line was 1·26 times as wide as the one next below it, so that the logarithms of their widths differed by 0·1, and the scale was then reduced rather more than twenty times and printed on sensitised paper, the haziness, which is characteristic of real spectral lines, being produced by inserting various thicknesses of white paper between the negative and the sensitive paper.

To standardise this prepared scale the line E of the Fraunhofer spectrum on Higgs's charts was used, and the intensities of thirty-six lines between λ 5261·8 and λ 5276·2 were measured, on the scale, on five different charts, and the five independent scale readings, their mean, the residuals from the mean and the width of each line in Ångström units, are given in the table accompanying Prof. Pickering's paper.

A PROVISIONAL CATALOGUE OF VARIABLE STARS.—No. 3 vol. xlviii. of the Harvard College Observatory *Annals* is devoted to a provisional catalogue of variable stars in which reference is made to some 1227 different variables. The catalogue has been prepared from a card-index of variable stars, commenced by Prof. W. M. Reed in 1888, and carried forward by Miss A. J. Cannon since 1900, which now contains about 34,000 cards referring to observations of variables.

A new notation has been adopted after grave consideration in this catalogue. Each star is designated by a number containing six figures, which are printed in ordinary type if the star is in the northern hemisphere and in italics if it is in the southern. The first two figures give the hours and the second two the minutes in the R.A., whilst the last two give the degrees in the declination; thus the designation of the first star in the catalogue (V. Sculptoris) is *000339* which, when translated, gives the approximate position of the star as R.A. = 0h. 3m., Dec. = −39°.

The catalogue also gives the Chandler number, the name of the star or its constellation, the D.M. number, the exact position for 1900, the chief particulars of the elements, the class of the variable and of its spectrum, and the date of discovery, with the name of the discoverer, for each variable.

MASS OF MERCURY.—In No. 3897 of the *Astronomische Nachrichten*, Prof. T. J. J. See, of Washington, gives the results of his recomputation of the mass of Mercury, and points out, *en passant*, the importance to workers in celestial mechanics of obtaining the truest possible value of this constant.

The latest measurements of the planet's diameter have slightly increased the former values, and Prof. See adopts 6″·00 as the most probable value of the diameter at unit distance; this gives an absolute diameter of 4351 ± 72km. and a resulting mass of $m = 1 : 14868548 \pm 743427$, which Prof. See adopts as the definite value. The mean specific gravity of the planet, with this mass, is 3·09, and this conforms very well with the other densities obtaining in the solar system.

CORRECTIONS TO EXISTING STAR CATALOGUES.—Since the publication of the "Catalogue of Reference Stars in the Zone +46° to +55°," by the Royal Observatory of Catania, Signor G. Boccardi has discovered a number of errors in various existing catalogues. These are set forth and their corrections given in a paper communicated by him to No. 3898 of the *Astronomische Nachrichten*; they include errata in the coordinates and in the precessional corrections.

Twelve catalogues are dealt with, including, among others, "The Radcliffe Catalogue of 6317 Stars (1845·0),"

"The Brussels Catalogue of 10,792 Stars (1865·0)," "The Harvard College Catalogue of 8627 Stars, A.G. Zone +50° to +55°" (Leipzig, 1892), and "The Bonn Catalogue of 18,457 Stars (1875·0), A.G. Zone +40° to +50°," published at Leipzig in 1894.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

OXFORD.—An examination for a geographical scholarship of the value of 60*l.* will be held on Wednesday, October 14. Candidates, who must have taken honours in one of the final schools of the university, should send in their names to the reader in geography not later than Thursday, October 1. The scholar elected will be required to attend the full course of instruction at the School of Geography during the academic year 1903–4, and to enter for the university diploma in geography in June, 1904.

DR. F. H. NEWMAN, principal of the Carlisle Technical School and director of higher education in that city, has been appointed principal of the Norwich Technical Institute and organiser of higher education.

IT is stated in *Science* that a gift of ten thousand dollars has been made to Washington and Lee University by Mrs. Cyrus H. McCormick and her three sons, of Chicago, the interest of which sum is to be devoted to the development of the department of physics. A new laboratory of engineering and physics, the gift of an anonymous donor, is expected to be ready for occupation in the summer of next year.

THE evening continuation schools in connection with the School Board for London reopened on September 14. As the School Board will cease to exist after the end of April next the present session will be the last under the Board. Among the numerous classes arranged we notice that doctors and nurses will teach first aid and home nursing in upwards of two hundred schools. There will also be facilities for women and girls to learn practical cookery, dress-cutting and making, and laundrywork, and for men and boys to receive instruction in woodwork. The lantern will, in many cases, be used to illustrate the lessons in geography. The Board has arranged for medical men to give simple lectures on health in twenty schools; the subjects will include the air and ventilation, the house, prevention of consumption, the care of the skin, personal hygiene, how to prevent the spread of infectious disease, the care of infancy and childhood, ill-health in women, &c.; all the lectures will be illustrated by diagrams, and many simple experiments will be shown by the lecturers.

THE Board of Education, South Kensington, has issued the following list of candidates successful in the 1903 competition for the Whitworth scholarships and exhibitions:—Scholarships, 125*l.* a year each (tenable for three years), John S. Nicholson, Alford, Aberdeenshire; Leonard Southerns, Retford, Notts.; Alec J. Simpson, Edinburgh; Alexander Gray, Edinburgh. Exhibitions, 50*l.* (tenable for one year), Frederick G. Turner, Southsea; James Cunningham, Banbury; William Welch, London; Edmund W. Spalding, Lincoln; William E. Hogg, London; Alfred R. Stamford, Plumstead, Kent; Joseph Lloyd, Pembroke Dock; John A. Davenport, Liverpool; Stewart S. Spears, Sheerness-on-Sea; James Lees, Southsea; William H. Powell, London; Edwin C. Trew, Landport, Portsmouth; Frederick W. B. Sellers, Sutton, Surrey; John E. Lister, Doncaster; Richard W. Bailey, Manor Park, Essex; Laurence H. Pomeroy, London; Christopher J. Lees, London; Fred Newell, Plumstead, Kent; Edmund G. Nicholls, Swansea; Maurice K. Pedlar, East Stonehouse, Devon; George F. Sutherland, Aberdeen, N.B.; Charles I. Sutton, Plumstead, Kent; Robert H. Barr, Barrow-in-Furness; William H. Hemer, Devonport; James Nicol, Barrhead, N.B.; Frederick E. Pollard, Eastwood, Notts.; Arnold Sykes, Huddersfield; Wilfred C. Kimber, London; Henry F. Elliott, Plumstead, Kent; David Richardson, Crewe.

THE following list of successful candidates for royal exhibitions, national scholarships, and free studentships (science), 1903, has been issued by the Board of Education, South Kensington:—Frederick G. Turner, Southsea; James M. Mackintosh, Inverness, N.B.; Samuel Lees, Broughton, Manchester; John H. Hugon, Eccles, Manchester; Arthur A. Rowse, Southsea; William E. Hogg, London; William L. Perry, Plymouth, royal exhibitions; Archibald Ward, Sheffield; Alexander Gray, Edinburgh; Edwin S. Crump, Wolverhampton; Leslie G. Milner, New Brompton, Kent; Archibald R. Richardson, London; Francis G. Steed, Devonport, national scholarships for mechanics (group A); Harold H. Broughton, Huddersfield; George F. Sutherland, Aberdeen, N.B., free studentships for mechanics (group A); William H. L. Patterson, Chiswick; Arthur E. Hall, Swindon; William F. G. Swann, Brighton; James Hoggarth, Bath; John Watson, Sunderland, national scholarships for physics (group B); Charles I. Robinson, London, free studentship for physics (group B); Frederick Dewhurst, Middleton Junction, Manchester; William Godden, Canterbury; George S. Whitby, Hull; John F. Stansfield, Morley, Leeds; Henry Holmes, Middlesbrough; Thomas Jackson, Middlesbrough, national scholarships for chemistry (group C); Frederic W. Caton, Hove, Sussex; John Keegan, Burnley, free studentships for chemistry (group C); Edward Hindle, East Bierley, Bradford; Ethel Mellor, Burnley, national scholarships for biology (group D); Ellis L. Jones, Blaenau Festiniog, free studentship for biology (group D); Winifred M. Clune, Bristol; Fred Thistlethwaite, Burnley; Diogo F. de Souza, London, national scholarships for geology (group E).

SOCIETIES AND ACADEMIES.

PARIS.

Academy of Sciences, September 7.—M. Albert Gaudry in the chair.—Parthenogenesis of the larvæ of Asteriæ by the action of carbonic acid, by M. Yves **Delage.** By modifying the conditions, the larvæ develop to the stage when all the essential organs are well marked.—On the production of glycogen in fungi cultivated in weak sugar solutions, by M. Émile **Laurent.** The production of reserve carbohydrates is related both in fungi and in vascular plants to a food supply containing an abundance of sugar or analogous substances. The author has discovered an interesting exception to this rule, four species of moulds, *Mucor racemosus, Sclerotinia Libertiana, Botrytis cinerea,* and *Saccharomyces cerevisiae*, all giving considerable quantities of glycogen when grown in very dilute organic solutions.—Observations of the planet MA (August 24, 1903) made at the Observatory of Besançon, by M. P. **Chofardet.**—On a bacterial disease of tobacco, "chancre" or "anthracnose," by M. G. **Delacroix.** This disease is due to a bacillus, not previously described, and to which the name of *Bacillus oeruginosus* is given, on account of the coloration it develops in certain culture media.

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